Amendments to the Specification

Please replace the paragraphs beginning on page 2, line 10 and ending on page 2, line 14, as follows:

"Method, System, and Apparatus for Balanced Frequency Up-Conversion of a Baseband Signal," Ser. No. 09/525,615, filed March 14, 2000~~Attorney Docket No. 1744.0450003~~; and

"Matched Filter Characterization and Implementation of Universal Frequency Translation Method and Apparatus," Ser. No. 09/521,878, filed March 9, 2000~~filed on 3/9/00, Attorney Docket No. 1744.0920000~~.

Please replace the paragraph beginning on page 11, line 1 and ending on page 11, line 2, as follows:

~~FIG. 63A-D illustrates~~FIGs. 63A, 63B (which consists of 63B-1, 63B-2, 63B-3, and 63B-4), 63C (which consists of 63C-1, 63C-2, and 63C-3), and 63D illustrate various implementation circuits for the modulator 3710 according to embodiments of the present invention;

Please replace the paragraphs beginning on page 85, line 13 and ending on page 85, line 16, as follows:

FIG. 63B (which consists of FIGs. 63B-1, 63B-2, 63B-3, and 63B-4) illustrates the I channel 6306 that processes the I data 6304a from the I input circuit 6302a.

FIG. 63C (which consists of FIGs. 63C-1, 63C-2, and 63C-3) illustrates the Q channel 6308 that processes the Q data 6304b from the Q input circuit 6306b.

Please replace the paragraph beginning at page 108, line 2 and ending at page 108, line 22, as follows:

In an embodiment, the pulses in control signal 2516 have non-negligible apertures that are established to improve energy transfer to the de-spread baseband signal. This occurs because the aperture width (or pulse width) determines how long the

switch 2528 is closed during undersampling, which affects the amount of energy transferred from the input spread spectrum signal 2524 to the de-spread baseband signal 2526. In other words, non-negligible amounts of energy are transferred from the spread spectrum signal to the de-spread baseband signal during the undersampling. In one embodiment, the pulse apertures are non-negligible and less than ½ the period associated with the approximate center frequency f_C of the input spread spectrum signal. In a second embodiment, the pulse apertures are between ¼ and ½ the period associated with approximate center frequency f_C of the input spread spectrum signal 2534. The pulse apertures can be any fraction of a period associated with the center frequency f_C of the input baseband signal. In a third embodiment, the pulses in the control signal 2516 are approximately ½ of a period associated with input spread spectrum signal 2524. In a fourth embodiment, the pulses in the control signal 2516 incorporate matched filter concepts that are further described in co-pending U.S. Patent Application entitled, "Matched Filter Characteristics and Implementations of Universal Frequency Translation Method and Apparatus," ~~Attorney docket no. 1744.0920000~~Ser. No. 09/521,878, filed March 9, 2000. In other words, the pulses of the control signal 2516 can be shaped according to matched filter concepts in order to improve or maximize energy transfer to the baseband signal, as described in the above mentioned patent application.

Please replace the paragraph beginning on page 109, line 15 and ending on page 109, line 18, as follows:

The embodiments discussed above in FIG. 25H-J are further described in co-pending US. patent application titled," Matched Filter Characterization and Implementation of Universal Frequency Translation Method and Apparatus," Ser. No. 09/521,878, filed March 9, 2000~~filed on 3/9/00, Attorney Docket No. 1744.0920000~~.

Please replace the paragraph beginning on page 130, line 13 and ending on page 131, line 2, as follows:

As stated above, the relative amplitude for each harmonic 3128 in the spread spectrum signal 3117 can be tuned by adjusting the pulse widths of the pulses in the control signal 3109. In other words, the pulse widths are established to improve energy

transfer to a desired harmonic of interest. More specifically, narrowing the pulse width shifts energy into the higher frequency harmonics, and widening the pulses shifts energy into the lower frequency harmonics. In embodiments, the pulse width is adjusted so as to be ½ of a period of the harmonic of interest. For example, if the desired frequency of the output signal 3126 is 1 Ghz, then the pulse width of the pulses can be selected as 500 psec, which is ½ of a period of 1 Ghz. This can be restated as setting the pulse width to be π radians at the harmonic of interest. The generation of a harmonically rich signal by gating (or sampling) a baseband signal is further described in section 3 herein, and is also described in co-pending U.S. patent application titled, " Method and System for Frequency Up-conversion," Ser. No. 09/176,154, filed on October 21, 1998. Additionally, matched filter concepts can incorporated as described in pending U.S. patent application titled, "Matched Filter Characterization and Implementation of Universal Frequency Translation Method and Apparatus," Ser. No. 09/521,878, filed March 9, 2000~~filed on 3/9/00, Attorney Docket No. 1744.0920000~~.